

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
16 October 2003 (16.10.2003)

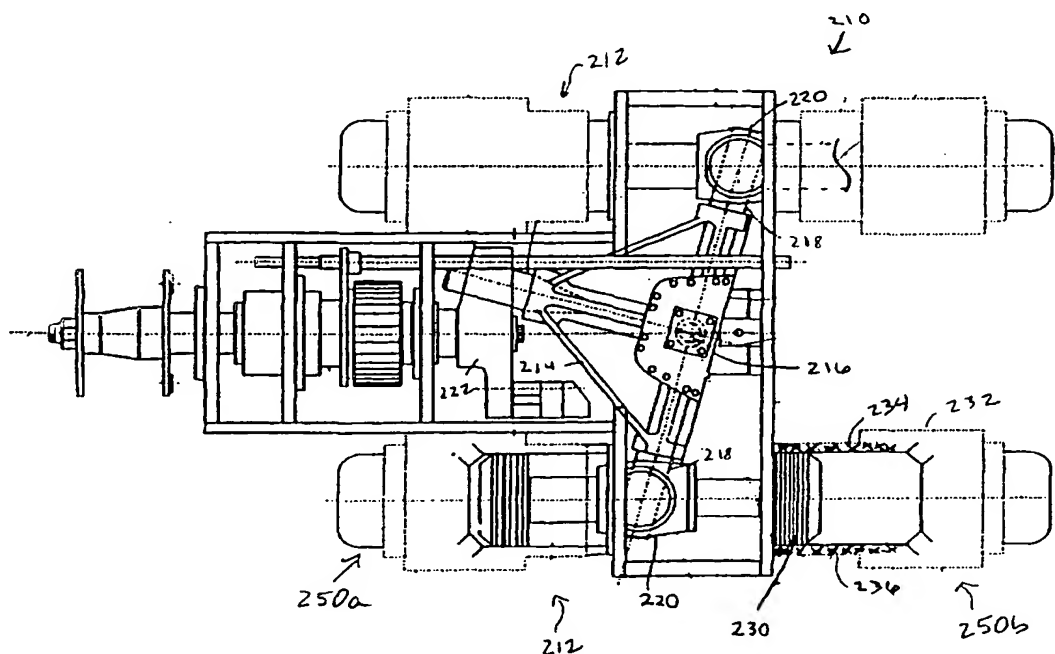
PCT

(10) International Publication Number
WO 03/085259 A1

- (51) International Patent Classification⁷: **F04B 9/14** (74) Agent: **KRISTAL, Phyllis, K.**; Fish & Richardson P.C.,
1/12, 17/00, F01B 1/00 1425 K Street, NW, 11th Floor, Washington, DC 20005-3500 (US).
- (21) International Application Number: **PCT/US03/09702**
- (22) International Filing Date: **31 March 2003 (31.03.2003)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data:
60/368,525 1 April 2002 (01.04.2002) **US**
- (63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:
US **60/368,525 (CON)**
Filed on **1 April 2002 (01.04.2002)**
- (71) Applicant (for all designated States except US): **R. SANDERSON MANAGEMENT, INC.** [US/US]; 63 West Hidden Valley Airpark, Denton, TX 76208 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **SANDERSON, Albert, E.** [US/US]; 70 Forest Park Drive, Carlisle, MA 01741 (US).
- (81) Designated States (national): **AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.**
- (84) Designated States (regional): **ARIPO** patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), **Eurasian** patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), **European** patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), **OAPI** patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report

[Continued on next page]

(54) Title: **VARIABLE STROKE/CLEARANCE MECHANISM**



(57) **Abstract:** An assembly includes a cylinder (232) and a piston assembly (212) housed within the cylinder and configured for reciprocal motion relative to the cylinder. The piston assembly and cylinder include a magnet (230) and coil (234) configured to undergo relative motion of the piston assembly and cylinder. The assembly includes a transition arm (214) and a rotating member (222) coupled to the piston assembly by the transition arm. The reciprocal motion is linear in space and sinusoidal in time.

WO 03/085259 A1